

The secrets of NASA's Webb telescope's "deployable tower assembly"

September 10 2015, by Rob Gutro



Recently, engineers at Northrop Grumman Corporation in Redondo Beach, California were testing the DTA to ensure it worked properly. Credit: Northrop Grumman Corp.

Building a space telescope to see the light from the earliest stars of our universe is a pretty complex task. Although much of the attention goes to instruments and the giant mirrors on NASA's James Webb Space Telescope, there are other components that have big jobs to do and that required imagination, engineering, and innovation to become a reality.

For example, engineers working on the Webb telescope have to think of everything from keeping instruments from overheating or freezing, to packing up the Webb, which is as big as a tennis court, to fit inside the rocket that will take it to space. Those are two areas where the "DTA" or Deployable Tower Assembly (DTA) plays a major role.

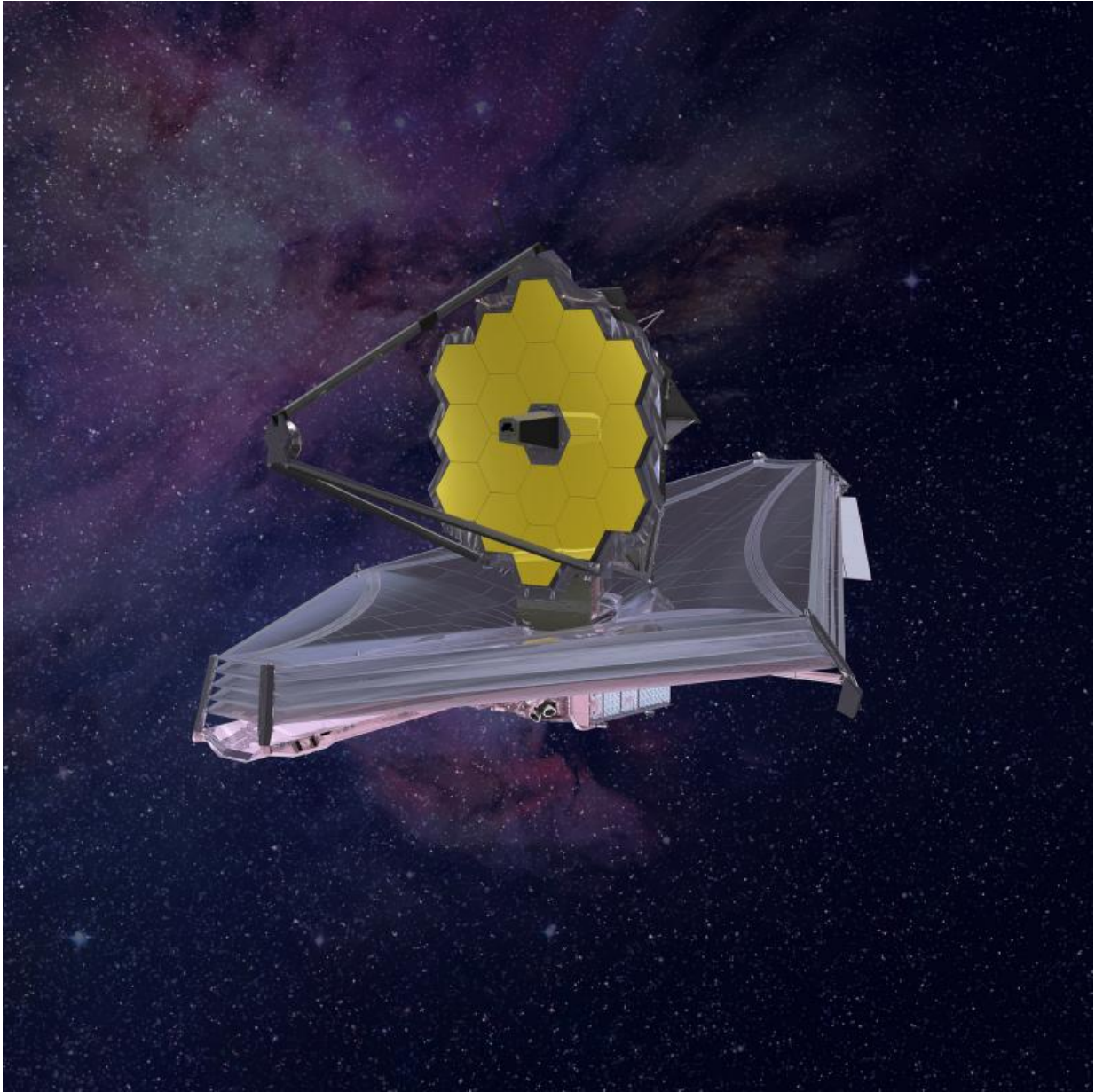
The DTA looks like a big black pipe and is made out of graphite-epoxy composite material to ensure stability and strength with extreme changes in temperature like those encountered in space. When fully deployed, the DTA reaches ten feet in length.

The DTA interfaces and supports the spacecraft and the telescope structures. It features two large nested telescoping tubes, connected by a mechanized lead screw. It is a deployable structure that is both very light and extremely strong and stable.

The Webb telescope's secondary mirror support structure and DTA contribute to how the telescope and instruments fit into the rocket fairing in preparation for launch. The DTA allows the Webb to be short

enough when stowed to fit in the rocket fairing with an acceptably low center of gravity for launch.

Several days after the Webb telescope is launched, the DTA will deploy, or separate, the telescope mirrors and instruments from the spacecraft bus and sunshield. This separation allows the sunshield to unfurl and shade the telescope and instruments from radiant heat and stray light from the sun and Earth.



Artist's impression of NASA's James Webb Space Telescope. Credit: NASA

The DTA was designed, built and tested by Astro Aerospace - a Northrop Grumman Company, in Carpinteria, California.

The James Webb Space Telescope is the scientific successor to NASA's

Hubble Space Telescope. It will be the most powerful [space telescope](#) ever built. The Webb telescope is an international project led by NASA with its partners, the European Space Agency and the Canadian Space Agency.

More information: For more information about the Webb telescope, visit: www.nasa.gov/webb or jwst.nasa.gov

Provided by NASA

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